

WHAT IS CLAIMED IS:

- 5 *HPB*
1. An electrode drug release (delivery) system comprising an electroactive polymer having at least one electrically addressable release pad(s), said system comprising:
- 10 a. at least one electrode system(s) containing a drug releasable therefrom upon application of a potential to said electrode which is in electrical communication with
- b. at least one independently electrically addressable release pad(s),
- 15 whereby the application of an electrical potential or current to said pad(s) is communicated to said electrode(s) causing said drug to be effectively released or delivered.
2. The system of claim 1 wherein said electrode systems
- 20 comprises more than one electrode wherein each electrode is independent of one another.
3. The system of claim 1 wherein more than one pad is utilized in said electrode drug release system.
- 25 4. The system of claim 3 wherein multiple electrodes and multiple pads are employed therein.
5. The system of claim 4 wherein said electrode(s) is an
- 30 electroactive polymer.

6. The system of claim 5 wherein said electroactive polymer is polypyrrole.

7. The system of claim 6 wherein said drug is selected from the group consisting of NSAIDS, analgesics, antihistamine, antitussives, decongestants, expectorants, steroids, enzymes, proteins, antibiotics, hormones, and mixtures thereof and the like.

8. The system of claim 7 wherein said drug is selected from the group consisting of nutritional supplements, s-ibuprofen, ketoprofen, fenoprofen, indomethacin, meclizolam, mefenamic acid, naproxen, phenylbutazone, piroxicam, tolmetin, sulindac, dimethyl sulfoxide, benzocaine, pramoxine, dibucaine, diclonine, lidocaine, mepiracaine, prilocaine, and tetracaine, opiate analgesics, non-opiate analgesics, non-narcotic analgesics, acetaminophen, calamine, zinc oxide, tannic acid, Hamamelis water, zinc sulfate, triamcinolone, acetonide, prednisone, beclomethasone dipropionate, terbutaline sulfate, albuterol, leukotriene receptor antagonists, electrolytes, metals, minerals, antianxiety, antidepressant agents, antimicrobial agents, antiviral agents, antihistamines, immune-suppression agents, cholesterol-lowering agents, cardiac, high-blood pressure agents, mixtures thereof and the like.

9. A method of providing medicine to a patient comprising:
a) placing a burst electrode drug release (delivery) system in external contact with a patient, said system comprising at least one electrically addressable release pad(s) and at least one burst electrode system(s) containing a drug releasable therefrom upon application of a potential to said electrode, said electrode in electrical communication with said release pad(s), and

b) applying an electrical potential or current to said release pad(s), wherein the potential or current is communicated to said burst electrodes whereupon said drug is effectively released or delivered to the patient.

10. The method of claim 9 wherein the electrode is an electroactive polymer.

5 11. The method of claim 9 wherein said drug is selected from the group consisting of NSAIDS, analgesics, antihistamine, antitussives, decongestants, expectorants, steroids, enzymes, proteins, antibiotics, hormones, mixtures thereof and the like.

10 12. The method of claim 9 wherein said drug is selected from the group consisting of nutritional supplements, s-ibuprofen, ketoprofen, fenoprofen, indomethacin, meclofentamate, mefenamic acid, naproxen, phenylbutazone, piroxicam, tolmetin, sulindac, dimethyl sulfoxide, benzocaine, pramoxine, dibucaine, diclonine, lidocaine, mepiracaine, prilocaine, and tetracaine, opiate analgesics, non-
15 opiate analgesics, non-narcotic analgesics, acetaminophen, calamine, zinc oxide, tannic acid, Hamamelis water, zinc sulfate, triamcinolone, acetamide, prednisone, beclomethasone dipropionate, terbutaline sulfate, albuterol, leukotriene receptor antagonists, electrolytes, metals, minerals, antianxiety, antidepressant agents, antimicrobial agents, antiviral agents, antihistamines, immune-suppression agents,
20 cholesterol-lowering agents, cardiac, high-blood pressure agents, mixtures thereof and the like.

13. The method of claim 9 wherein said drug is prescribed from a remote location from the patient, by an electrical signal sent to said release pad, said
25 electrical sent causing a release of said drug to the patient.

14. A medical application system which comprises a burst electrode drug release (delivery) system comprising an electroactive polymer having at least one electrically addressable release pad(s), said system comprising:
30

a. at least one burst electrode system(s) containing a drug
releasable therefrom upon application of a potential to said electrode which is in
electrical communication with

5 b. at least one independently electrically addressable release
pad(s),

whereby the application of an electrical potential or current to said
pad(s) is communicated to said burst electrode system(s), whereupon said drug is
effectively released or delivered.

10

15. The system of claim 14 wherein said electrode system(s)
comprises more than one electrode independent from one another.

16. The system of claim 14 wherein more than one pad is utilized
15 in said electrode drug release system.

17. The system of claims 15 or 16 wherein multiple electrodes and
multiple pads are employed therein.

20 18. The system of claim 17 wherein said drug is selected from the
group consisting of NSAIDS, analgesics, antihistamine, antitussives, decongestants,
expectorants, steroids, enzymes, proteins, antibiotics, hormones, and mixtures thereof
and the like.

25 19. The system of Claim 18 wherein said drug is selected from the
group consisting of nutritional supplements, s-ibuprofen, ketoprofen, fenoprofen,
indomethacin, meclofentamate, mefenamic acid, naproxen, phenylbutazone,
piroxicam, tolmetin, sulindac, dimethyl sulfoxide, benzocaine, pramoxine, dibucaine,
diclonine, lidocaine, mepiracaine, prilocaine, and tetracaine, opiate analgesics, non-
30 opiate analgesics, non-narcotic analgesics, acetaminophen, calamine, zinc oxide,
tannic acid, Hamamelis water, zinc sulfate, triamcinolone, acetamide, prednisone,

5 beclomethasone dipropionate, terbutaline sulfate, albuterol, leukotriene receptor antagonists, electrolytes, metals, minerals, antianxiety, antidepressant agents, antimicrobial agents, antiviral agents, antihistamines, immune-suppression agents, cholesterol-lowering agents, cardiac, high-blood pressure agents, mixtures thereof and the like.

10 20. A method of administering medication to a physically remote patient through a burst electrode drug release (delivery) system, said system comprising an electroactive polymer having at least one electrically addressable release pad(s), said system further comprising:

- 15 a. at least one burst electrode system(s) containing a drug releasable therefrom upon application of a potential to said electrode which is in electrical communication with
- b. at least one independently electrically addressable release pad(s),

20 wherein said method comprises the application of an electrical potential or current to said pad(s) which is then communicated to said burst electrodes whereupon said drug is effectively released or delivered to said patient.

21. The method of claim 20 wherein said patient is a human patient.

25 22. The method of claim 20 wherein said patient is an animal patient.

30 23. The method of claim 20 wherein telemetry is employed to transfer biomedical information from said patient to said doctor.

24. The method of claim 23 wherein said doctor employs electrical communication means to transmit an activating signal to said medical application system whereby medicine is made effectively available to said patient.

5 25. An article of manufacture which comprises an electronically conductive polymer which surrounds a medication, an electrode which upon the receipt of a signal releases an electrochemical potential which interacts with said conductive polymer, causing the release of said medication.

10 26. The article of manufacture of Claim 25 wherein the electrode is a burst electrode.

27. The article of manufacture of Claim 25 and 26 wherein the polymer is polypyrrole.

15 28. The article of manufacture of Claims 25 and 27 wherein the article of manufacture is an addressable release pad and is in contact with a patient which receives said dose of medication.

20 29. A process of administering medicine to a patient through a burst electrode drug release system comprising sending a signal through a signaling means to a pad in contact with a patient, said pad comprising at least one electrode to receive said signal, wherein said electrode upon receipt of the signal causes the release of medicine to medicate the patient.

25 30. The process of claim 29 wherein the receipt of the signal by the electrode causes the patient to be medicated by the release of an electrical potential.

30 31. The process according to claim 30 wherein the electrical potential interacts with electroactive polymers, said electroactive polymers containing said medicine.

32. The process according to claim 29 wherein the electrode is faradic.

5 33. The process according to claim 29 wherein the electrode is a burst release electrode.

34. The process of claims 32 and 33 wherein the electrode is an electroactive polymer.

10 35. The process of claim 34 wherein the electroactive polymer is polypyrrole.

36. The method of claim 29 wherein the patient is a human being.

15 37. The method of claim 29 wherein the patient is an animal.

38. The process according to claim 29 wherein said medicine comprises the group of NSAIDS, analgesics, antihistamine, antitussive, decongestant, expectorants, steroids, enzymes, proteins, antibiotics, hormones, mixtures thereof and the like.

20 39. An article of manufacture through which a doctor, remote from a patient, can by telemetry contained within the article of manufacture, observe a patient's vital signs and after observation of the patients vital signs, can through a signaling device, send to said article of manufacture an electronic signal which causes the release of a selected medicinal compound.

25 40. The article of manufacture of claim 39 wherein more than one medicinal compound is contained within the article of manufacture.

41. The article of manufacture of claim 39 wherein a separate signal can be sent to release each different medicine contained therein.

5 42. The article of manufacture of claim 39 and 41 wherein the article of manufacture is specifically fitted for contact with animals.

43. The article of manufacture of claim 42, wherein the article of manufacture is an animal collar.

10 44. A controlled drug delivery system comprising at least one electrically addressable release pad, wherein the application of an electrical potential or current to said pad communicates to a burst electrode contained within said controlled drug delivery system, causes the release of a biologically active ingredient.

15 45. The system of claim 44 further comprising an electroactive polymer with said biologically active ingredient incorporated thereon.

20 46. The system of claim 45 wherein a second polymer is applied as an overlayer to the electroactive polymer and said biologically active ingredient incorporated thereon.

47. The system of claim 45 wherein the biologically active ingredient is anionic.

25 48. The system of claim 46 wherein a polyanionic dopant is incorporated into the electroactive polymer and the biologically active ingredient is cationic.

30 49. The system of claims 47 and 48 wherein the biologically active ingredient is released in a burst release.

50. The system of claims 47 and 48 wherein the biologically active ingredient is released in a Faradaic manner.

5 51. The system of claims 49 and 50 wherein the biologically active ingredient is a pharmaceutical compound.

52. The system of claim 51 wherein the electric potential or current is triggered by a signal from a remote source.

10 53. The system of claim 52 wherein the signal can be modulated to correspond to the release of more than one type of biologically active ingredient.